

Translation

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PATENT COOPERATION TREATY

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PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 10592 WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/050023	International filing date (day/month/year) 19 février 2003 (19.02.2003)	Priority date (day/month/year) 21 février 2002 (21.02.2002)
International Patent Classification (IPC) or national classification and IPC G02B 6/42		
Applicant FCI		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 08 septembre 2003 (08.09.2003)	Date of completion of this report 04 December 2003 (04.12.2003)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/050023

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages _____ 1-8 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages _____ 1-10 _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the drawings:
 pages _____ 1/1 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1-10	YES
	Claims		NO
Inventive step (IS)	Claims	1-10	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-10	YES
	Claims		NO

2. Citations and explanations**1. Reference is made to the following documents:**

D1: EP-A-0 618 468 (MOTOROLA INC) 5 October 1994
(1994-10-05)

D2: EP-A-0 901 023 (NIPPON ELECTRIC CO) 10 March
1999 (1999-03-10)

2.1 D1, which is considered to be the prior art closest to the subject matter of claim 1, describes (the references between parentheses apply to this document):

2.2 An optical interconnection module (see figures 1 and 4) comprising a housing (70) provided with at least one optical section (75) positioned between an optical input port (figure 4, upper portion, close to 77) of the module and an optical output port (figure 4, lower portion, close to 73) of the module, characterised in that the optical section is overmoulded in the housing and forms an optical waveguide and in that the optical guide section comprises at least one cone (see column 5, lines 37 to 57).

2.3 This document also describes an optical ferrule comprising a module according to claim 1, characterised in that it comprises an electronic

integrated circuit (76, 77) for detecting or emitting light rays, which integrated circuit is mounted on the housing by re-melting (column 13, lines 13 to 17) solder bumps. D1 further indicates that a flared cone coupled with an optical guide facilitates the coupling (see column 5, lines 37 to 57) of a module and an optical guide such as a fibre.

- 3.1 The problem remaining is therefore that of effectively coupling an optical guide with, for example, an optoelectronic element while preserving ease of coupling.
- 3.2 The following feature provides the solution: an increasingly flared cone is placed at one end of the section, an optical output section is formed and the optical section comprises an end lens at the end of the cone.
- 3.3 D2 indicates that it is possible to overmould lenses on the output of a module (see D2, column 5, paragraph 27). However, the document mentions that alignment of the system is critical.
- 3.4 A combination of D1 and D2 would not lead to the solution proposed by the application, since the association of the two documents is not suggested and the "flared cone plus end lens" combination is not obvious. As a solution to the problem of alignment, D2 proposes the use of mechanical interconnections between modules. D1 proposes the use of a constricted cone at the output from the module and a flared cone on the connector opposite.
- 3.5 The subject matter of the present application is therefore considered novel (PCT Article 33(2)) and inventive (PCT Article 33(3)).